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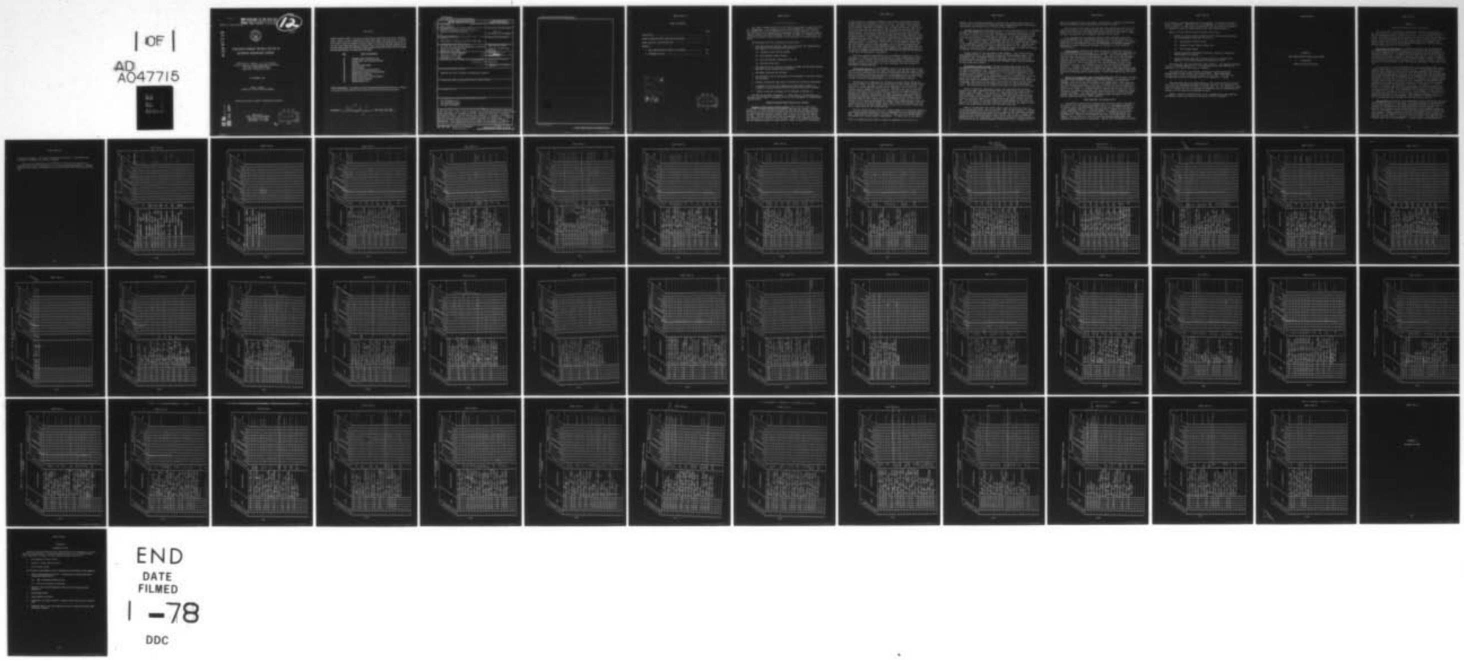

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REPORT NO. NADC-77291-60

DEVELOPING TRADEOFF CRITERIA FOR USE IN REVIEWING MAINTENANCE TRAINER

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22 NOVEMBER 1977

PHASE I REPORT
AIRTASK NO. A413413-0016-X413000021

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Prepared for
NAVAL AIR SYSTEMS COMMAND
Department of the Navy
Washington, D.C. 20361

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REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

(14)

1. REPORT NUMBER: NADC-77291-60

2. GOVT ACCESSION NO.:

3. RECIPIENT'S CATALOG NUMBER:

(6)

4. TITLE (and Subtitle): DEVELOPING TRADEOFF CRITERIA FOR USE IN REVIEWING MAINTENANCE TRAINER. Phase 1,

5. TYPE OF REPORT & PERIOD COVERED: Phase 1.

6. PERFORMING ORG. REPORT NUMBER:

7. AUTHOR(s): (10) CDR Charles J. Theisen, Jr., Ph.D, MSC, USN

8. CONTRACT OR GRANT NUMBER(s):

9. PERFORMING ORGANIZATION NAME AND ADDRESS:
Aircraft and Crew Systems Technology Directorate
Naval Air Development Center
Warminster, Pa. 18974

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS:
Airtask No. A413413-0016-X413000021

11. CONTROLLING OFFICE NAME AND ADDRESS:
Naval Air Systems Command
Department of the Navy
Washington, D.C. 20361

(11)

12. REPORT DATE: 22 Nov[redacted]77

13. NUMBER OF PAGES:

14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office):

(12) 54p.

15. SECURITY CLASS. (of this report): Unclassified

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE:

16. DISTRIBUTION STATEMENT (of this Report)

Approved for Public Release; Distribution Unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Job Performance Aids
Job Oriented Training
Aircraft Maintenance

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Task Identification Matrices (TIMs) were used in this study to document the tasks associated with organizational level maintenance of 4 systems on the S3A. These TIMs were used to evaluate maintenance trainers used in training S3A technicans. In general, the trainers provided very little practice in the skills required for maintenance. A Phase II study to develop training system specifications for the systems studied, is recommended. These specifications would support the development of effective trainers at costs significantly below the costs of the existing trainers.

DD FORM 1473, 1 JAN 73 EDITION OF 1 NOV 65 IS OBSOLETE

S/N 0102-LF-014-6601

UNCLASSIFIED 393532

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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INTRODUCTION

This report documents Phase I of this AIRTASK and presents a plan for Phase II. During Phase I, discussions were held with NAMTRAGRU H.Q., COMNAVAIRPAC, and COMASWWINGPAC Staffs, NAMTRADET 1036 and VS-41 FRAMP personnel. Each of these provided useful suggestions and meaningful insights which helped guide the conduct of Phase I and the development of plans for Phase II. Specifically the discussants provided valuable guidance on the selection of aircraft systems for study.

The following items were accomplished during Phase I:

1. Task Identification Matrices (TIMs) were developed for organizational maintenance of the following S3A subsystems:

   (a) Automated Flight Control System,

   (b) Environmental Control System,

   (c) Fuel and Inflight Refueling System, and

   (d) Auxiliary Power Unit.

2. The capabilities of existing maintenance trainers for the above systems and their use in teaching were documented.

3. The FRAMP curriculum was reviewed.

4. The procedures used by Lockheed for the development of existing courses were reviewed.

5. Detailed observations were made of technicians performing maintenance.

6. A complete library of S3A organizational maintenance manuals was assembled and those dealing with the selected systems were reviewed.

7. A Phase II plan was developed and is presented in appendix B.

The TIMs are included in appendix A. These tasks will be provided as a baseline for the Phase II contractor to use in the development of trainer/media specifications.

CURRENT NAMTRADET/FRAMP TRAINING AND TRAINERS

Automatic Flight Control System Training - Most of the two weeks spent in the AFCS training involves using handouts and technical manuals, primarily schematics, to review interfaces between the AFCS and other aircraft systems. The instructors feel that the trainees need to know more about interfaces to be able to identify problems caused by other systems, but reflected through the AFCS. The AFCS trainer shows what the components look like, but not how the components are installed in the aircraft. Most of the components indicate failure symptoms through the flight control system, so there is a "silhouette"

of the aircraft on a pedestal attached to the trainer with miniature control surfaces that move in response to control inputs. The trainer has a partial cockpit mockup that permits trainees to "fly" the silhouette. Both trainees and instructors expressed the feeling that, although the trainer is fun to fly, it is of little value as it relates to the job of maintaining the AFCS. The instructors wish that the AFCS trainer were connected to the Flight Control System trainer, so that the trainees could see the real flight controls move instead of just the silhouette, but they agreed that even this additional level of sophistication in the trainer would not substantially affect the learning of troubleshooting and repair. Most of the flight line level troubleshooting performed on the AFCS is achieved through a built-in test panel in the pilot's instrument panel. For the past 1-1/2 years, all of the aircraft systems have had this automatic built-in test equipment, but the "autobite" modification was just being installed in the trainer during our visit. This means that for the last 1-1/2 years, the trainer has been incapable of supporting practice of the primary automated troubleshooting task that forms the bulk of the organizational level troubleshooters' activities.

While more detailed task analysis will be required to arrive at a firm conclusion, it seems reasonable to assume that a trainer using actual aircraft components can be replaced using less costly media and/or a simulation based trainer. Avionics systems such as the S3A AFCS with effective BIT and good maintenance manuals would seem to be likely candidates for cost savings in maintenance training hardware.

Fuel System Training - At the NAMTRADET, about 2-1/2 days are spent on Fuel System, of which about 5 hours are spent standing around the Fuel System trainer. The instructor indicated that the trainer is used exclusively for "show and tell." There is no hands-on practice with any of its components, since it would leak a lot and require excessive maintenance if it were manipulated in this way. The trainer is the only training equipment in use for Fuel System training.

The trainer has a capability for insertion of several faults through the instructor's panel, but the faults do not produce the same symptom in the trainer that they do in the aircraft, so none of the instructors use this feature. The trainer is a scale model using mostly actual components, but it also uses some trainer-peculiar components. The instructor said that principles of operation and the traditional kind of troubleshooting discussion are supported mostly by handouts and technical publications, and that little or no time is devoted to discussion of removal, installation, or other maintenance procedures. The instructor expressed admiration of the ECS Environmental Control System[1] trainer, and wished that he had a similar means of depicting what goes on in the Fuel System to aid in teaching principles of operation and troubleshooting. Since the trainer conceals most of the things that it does, other than filling up various cells (which can be watched through windows in the cells) it doesn't really help much in describing how the system operates.

The Fuel System trainer seems to be a prime example of a traditional approach, via existing Military Standards, which is inappropriate to the teaching requirement. More detailed task analysis in Phase II should allow the determination of more appropriate training support requirements. It seems clear at this point,

[1] This is a hardwired panel which is similar in appearance to the EC II LP.

however, that any future procurement of similar fuel system trainers should be scrutinized to insure there is a specific need to support identified instructional requirements which cannot be met with less costly approaches.

Auxiliary Power Unit - Maintenance of the APU at organizational level is extremely limited. The service in the aircraft consists of tightening connections if leaks are observed, refilling the oil tank, and removing and installing the entire APU. If an APU is removed, it is taken back to the shop. If it needs anything other than cleaning of filters, it is generally sent back to the intermediate-level shop. The only hands-on practice associated with the APU is removal and installation [illegible] the aircraft, using a trainer that consists of an actual APU and a mockup of the compartment in which the APU is installed in the aircraft. Two-man teams can practice disconnecting the lines, sliding the APU out on its tracks, and removing it from the trainer. Handouts and technical manuals are used for limited discussions of principles of operation and troubleshooting.

Trainer support for APU maintenance seems adequate. Only limited savings seem promised through a more detailed analysis of APU maintenance tasks. It is recommended that, if adequate funding is available, the "O" level power plant maintenance tasks be analyzed, since it seems that requirements for hands-on practice might be achieved in the FRAMP with NAMTRADET theory training supported by media other than trainers.

Environmental Control System - Existing technical publications for the Environmental Control System assume the use at organizational level of a test set that no one actually uses. It was discovered that the tester did not test a number of things that it was supposed to, and it was nearly impossible to use because of space limitations in the aircraft. As a result, almost all of the troubleshooting performed at the organizational level is "shot-gunning," (without the use of the tester) a term offered by the people interviewed in the shop. Rather than expand the NAMTRADET course to try to give troubleshooters additional background to make up for the failure of the tester, the course was cut almost in half when they found that the tester was not usable at the organizational level. The students were given handouts consisting of workbooks with questions.

Theory of operation, operational checks, and troubleshooting (deriving symptoms from known component failures) were all taught using a large training device called "the panel." This device is a large graphic depiction of the system schematic, with back-lighted data flow lines and little rotating valves that can be used to show sequences of operation. The panel responds like the system to instructor inputs on a mockup of the flight cruise controls for the ECS. The instructors are extremely fond of and complimentary to the panel, but several of the people in the shop volunteered that they felt they hadn't learned much in the course that turned out to be of value on the job.

There is an additional ECS trainer that is used for hands-on practice of certain remove-and-install tasks for the ECS. This trainer consists of a mockup of the ECS compartment in the aircraft with a number of ECS components installed. The mockup includes fuselage formers and stringers, but no skin. Two-man teams practice several remove-and-install tasks, but for some of the more difficult operations one of the team members is occasionally permitted to stand outside the trainer and assist by reaching through the aircraft's skin, a condition that is

physically impossible in the real world. Nevertheless, a number of transferable skills are probably learned during practice with this device.

The instructor could recall only one ECS system modification that had to be installed in both of the training devices, and he indicated that this was done without much difficulty, requiring approximately one day to modify both trainers. The panel accommodates minor changes in data flow fairly easily.

It is expected that the detailed analysis of ECS maintenance tasks will yield specifications for a maintenance trainer which will use a great deal of simulation and allow the practice of troubleshooting. Additionally, this trainer should serve as an evaluation tool for the development of revised maintenance procedures to reduce the current reliance on "shot-gun" or trial-and-error troubleshooting.

Troubleshooting - Some time was spent talking with instructors about the distinction between troubleshooting as it is presently taught and troubleshooting as an activity that has to be performed on the job. All of the NAMTRADET instructors take essentially the same approach: they teach the system thoroughly, then talk their way through the system one component at a time, failing each component and showing how to figure out what the symptom of that component failure would be. This writer believes that troubleshooting, as an activity performed on the job, is a different activity that involves different mental processes: a symptom, that could be caused by any of a number of different failures, is brought to the man's attention and he must apply some process, hopefully a logical one, to isolate the cause of the symptom. Trainers incorporating simulation technology provide opportunities to teach troubleshooting viewed this way.

Review of Existing Task, Skill, Knowledge (TSK) Data - The TSK data from which the original S3A NAMTRADET courses were developed seems to be comprehensive and thorough. This was due in large measure to the assignment of four of the NAMTRADET Chief Petty Officers to Lockheed for several months. They instructed the Lockheed course developers in the use of NAMTRAGRU 1540.B and reviewed the products. Unfortunately, increasing pressure has been put upon the NAMTRADET to reduce course length. In revising courses to reduce training time, the course objectives, so carefully developed, have been revised into less specific, theory-oriented statements. For those systems studied in Phase II, task and training analyses will assist course managers in making courses job-specific and will provide supporting logic for course duration.

FRAMP PRACTICAL JOB TRAINING (PJT)

The FRAMP PJT curriculum was developed from the basic concept, expressed by CWO3 Larson, that they were training men to work in a maintenance department. To achieve this, a mini-maintenance office was set up with VIDS/MAF boards and a work assignment supervisor. Parts salvaged from a crashed S3A were used to create "bad" parts. A part, with known defects, was inserted in an aircraft assigned to the FRAMP and a gripe was entered on a VIDS/MAF NAVMACLANT TEST FORM 4790/41E. A total of 386 JOB PLANS, each with a different gripe, was created. On the face of it, this PJT looks like the most appropriate, well-thought-out training plan for maintainers. Because this PJT package is believed

to be unique in its completeness and in its approach, a thorough evaluation should be conducted. This evaluation is recommended as a follow-on to Phase II of this project. In many cases, an augmented FRAMP, using this PJT approach, can adequately handle all organizational level maintenance training.

Phase II of this effort has the following three goals:

1. Develop a training system specification for training organizational level maintenance technicians for the S3A:

   (a) Environmental Control System,

   (b) Automatic Flight Control System, and

   (c) Fuel Control System.

2. Develop maintainer performance evaluation criteria to measure the effectiveness of training.

3. Develop decision logic and criterion values for evaluating the adequacy of existing maintenance training units (MTUs).

The first goal will be accomplished under contract. The proposed statement of work is attached (appendix B). It is anticipated that this work can be completed 3 to 5 months after award of contract.

The second goal will be developed, using data developed during the accomplishment of the contract, by in-house effort. These performance criteria will be used as acceptance criteria for the MTUs. This task will be coordinated with the first goal and will be completed in 7 months.

The third goal would be accomplished as a joint in-house contractor effort with NAVAIR 413 designated personnel, NAVTRAGRU, and NTEC. The third goal will be pursued concurrent with the first and second goals, will be completed in draft form in 7 months, and will be validated and finalized after the procurement and evaluation of the specified maintenance trainers.

Phase II should be undertaken only if it is planned to buy the specified maintenance trainers and conduct an evaluation of their usefulness.

APPENDIX A

TASK IDENTIFICATION MATRIX (TIM) REPORT

prepared by

Applied Science Associates

APPENDIX A

TASK IDENTIFICATION MATRIX (TIM) REPORT

This report and its attachments document ASA's efforts in constructing and validating a Task Identification Matrix (TIM). The four subsystems selected for TIM development were the Auxiliary Power Unit, the Environmental Control System, the Automatic Flight Control System, and the Fuel and In-Flight Refueling System. Technical publications available to use here in Valencia were used to develop preliminary TIMs for all of the systems except the Automatic Flight Control System, for which we had insufficient documentation. The TIM for the AFCS was constructed at NAS, North Island.

Preliminary TIM Development - In constructing the TIM for each subsystem, we began by going through the Illustrated Parts Breakdown and identifying all functional components in the system that were authorized for any maintenance at the organizational level. We specifically excluded from the TIM such things as electrical and hydraulic connectors, hydraulic and pneumatic lines, and attaching hardware such as nuts, bolts, screws, washers, gaskets, brackets. Whenever it was unclear from the IPB or from associated work packages whether a particular hardware item was functional or not, the item was included as a line item in the TIM.

All line entries in the TIM qualified for remove-and-install tasks at the organizational level, at least, and were so noted. The maintenance and troubleshooting work packages for each of the systems were examined, and additional TIM cell entries were made to cover all tasks for which there were work packages or for which instructions were provided in work packages for other hardware items. When items were specifically mentioned at the terminal points of troubleshooting procedures, that fact was also noted in the TIM. Whenever work packages existed for more than one task for a given line item, references to the specific work packages were included in the "Notes" column in the TIM, and the cell entries were given subscripts corresponding to the notes. The letter "O" in a cell denotes the judgment that such a task is performed at the organizational level. A dash (-) in a cell indicates the judgment that no such task is performed at the organizational level. A "W" denotes both the existence of such a task and the presence of instructions for the task in a work package. As mentioned above, numerical subscripts to the "W" entries were used when a hardware item was covered by more than one work package. Page numbers and callout numbers from IPB or work packages were included with the line items in the TIM.

TIM Validation - Validation of the preliminary TIM was conducted at the North Island Naval Air Station in San Diego. The process followed in validating the TIM involved spending time with senior maintenance personnel in the shops responsible for maintenance of the systems with which we were concerned. We assembled the relevant technical publications and, as we proceeded through the TIM , we simultaneously tracked the IPB and the maintenance and troubleshooting work packages. Whenever questions arose that our experts couldn't answer, they would call in other people or we would resolve the question by examining the hardware involved, either in the shop or on the aircraft. For each line item in the TIM, every cell was investigated. In cases where we had inappropriately

included or excluded a cell entry (according to the expert), the entries were corrected to conform to the expert's judgment.

Note that the construction of the TIM for the AFCS did not identify any troubleshooting tasks in connection with O-level replaceable components. Troubleshooting of the AFCS is accomplished at the whole system level using comprehensive BIT.

TABLE A-I - TIM FOR AUTOMATIC FLIGHT CONTROL SYSTEM

Found in Troubleshooting	Code (Work Pack.)	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes (IPB 02200)
	02200	FLIGHT DATA COMPUTER	1	1	1	1	1	1	1	1	1	[illegible]	3	1	1		[illegible]
	02200	ELECTRICAL TEST PANEL	3	1	1	1	1	1	1	1	1	0	3	1	1		[illegible] 556
	02200	ATTITUDE HEADING REFERANCE SELECTOR	2B	1	1	1	1	1	1	1	1	0	0	1	1		
	02200	CONTROL STICK	4														
	02200	GYROSCOPE ASSY. (2)	5	1	1	1	1	1	1	0	1	1	3	1	0		[illegible]
	02200	ACCELEROMETER (2)	7		1	1		1	1	1	1	1	3	1	1		[illegible]
	02200	PITCH RATE SENSOR	8A	1	1	1	1	1	1	0	1	1	3	1	0		
	02200	ROLL POSITION TRANSDUCER	17	3	1	1	1	1	1	1	1	1	3	1	1		[illegible]
	02200	PITCH POSITION TRANSDUCER	22	3	1	1	1	1	1	1	1	1	3	1	1		[illegible]
	02200	AUTOMATIC FLIGHT CONTROLLER	29	1	1	1	1	1	1	1	1	3	1	1	0		[illegible]
	02200	ANNUNCIATOR (2)	32	1	1	1	1	1	1	1	1	1	0	1	1		

TABLE A-I - TIM FOR AUTOMATIC FLIGHT CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code (IPB)	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	0 2 2 0 0	ELECTRICAL TEST PANEL SWITCH LAMP		-	-	-	-	-	-	-	-	-	O	-	-		
	0 2 2 0 0	ELECTRICAL TEST PANEL INDICATOR LAMP		-	-	-	-	-	-	-	-	-	O	-	-		
	0 2 2 0 0	ELECTRO/MECHANICAL ROTORY ACCTUATOR (TG-209/ASW 33)		O	-	-	O	-	-	O	-	.	O	-	-		

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM

Found in Troubleshooting	Code ([illegible] in IPB)	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	1 Checkout/Troubleshoot	2 Clean	3 Disassemble/Assemble	4 Inspect	5 Lubricate	6 Operate	7 Remove/Install	8 Repair	9 Service	10	11	12	13 Notes
✓	00600	Valve, Drain, Water	11	-	-	-	W	-	-	-	-	O	W	-	-				1) WP 00300 2) WP 00403
✓	00600	Valve, Drain, Fuel Tank	15	-	-	-	W	-	-	-	-	O	W	-	-				1) WP00300 2) WP00403
	00700	Control Assy, Ball																	
		Bearing, 2500 Series,																	
		Fuel Transfer System	2										O	-					
	00700	Adaptor, Control, Fuel																	
		Transfer System	2A	-	-	-	-	-	-	-	-	-	O						
✓	00700	Lever, Manual Control,																	
		Fuel Transfer Valve	14	O	-	-	W	-	-	-	-	W	2	W	W				[illegible]
	00700	Lever, Remote Control,																	
		Fuel Transfer Valve	18	O	-	-	-	-	-	-	-	O	2	-	-				1) WP00404
	00700	Connecting Link, Rigid,																	
		Fuel Transfer Valve	24	-	-	-	-	-	-	-	-	-	-	-	-				
	00700	Control Assy, Push-Pull,																	
		Flexible, Fuel Interconnect	28	-	-	-	-	-	-	-	-	-	2	-	-				1) WP 00404
	00700	Adaptor, Support Push-Pull																	
		Control, Fuel Tank																	
		Interconnect Valve	39	-	-	-	-	-	-	-	-	-	2	-	-				1) WP 00404

① [illegible] refers to work package on troubleshooting
② [illegible] refers to work package on [illegible] system maintenance

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
✓	0 0 7 0 0	Valve, Butterfly, Tank Interconnect, Fuel	47	-	-	[illegible]	-	-	[illegible]	-	[illegible]	[illegible]	-	-			3) WP 00 300 3) WP 00404
	0 0 8 0 0	Adapter, Straight, Flange to Tube, Bulkhead. Engine Feed Shutoff Valve.	1	-	-	-	-	-	-	-	-	O	-	-	-		
	0 0 8 0 0	Clevis Assy., Rod End, Wing LE Cables, Firewall Shutoff	6	O	-	-	-	-	-	O	-	O	-	-			
✓	0 0 8 0 0	Valve, Gate, Aircraft Engine Feed	16	[illegible]	-	-	3	-	-	-	-	3	-	-			WP00300 3) WP 00405
	0 0 9 0 0	Clip [illegible]	25	-	-	-	-	-	-	-	-	-	-	-	-		[illegible] CT)
	0 0 9 0 0	Control Assy, Flexible, Push-Pull Rolling Friction	61	[illegible]	-	-	-	-	-	-	-	[illegible]	-	-	-		3) WP 00405
✓	0 1 2 0 0	Valve, Check, High Pressure Fuel	5	-	-	-	3	-	-	-	-	3	-	-			WP 00300 WP 00500
✓	0 1 3 0 0	Pump, Ejector, Fuel Transfer	4	-	-	-	3	-	-	-	-	3	-	-			[illegible] 3) WP 00402

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service	Notes
	01300	Filter, Particulate, Fuel Ejector Pump	5	-	-	-	-	[illegible]	-	-	-	-	[illegible]	-	-	D WP 00402
✓	01400	Pump, Ejector, Fuel Feed	18	-	-	-	1-	-	-	-	-	-	3-	-	-	WP 00400 D WP 00402
	01500	Switch	2	-	-	-	-	-	-	-	-	-	[illegible]	-	-	[illegible]
	01500	Switch	3	-	-	-	-	-	-	-	-	-	[illegible]	-	-	D WP 00407
	01500	Switch	6	-	-	-	-	-	-	-	-	-	[illegible]	-	-	D WP 00407
	01500	Switch	7	-	-	-	-	-	-	-	-	-	[illegible]	-	-	D WP 00407
	01500	Receptacle	11	-	-	-	-	-	-	-	-	-	[illegible]	-	-	D WP 00407
	01500	Indicator, Liquid Quantity Transfer Tank	12													[illegible]
	01500	Indicator, Liquid Quantity Feed Tank	20													[illegible] WP 00407
✓	01600	Valve, Fuel Check Flapper	5	-	-	-	3-	3-	-	-	-	3-	3	-	-	WP 00400 3, WP 00408
✓	01600	Valve, Fuel Check, Flapper	12	-	-	-	3-	3-	-	-	-	3-	3	-	-	WP 00400 WP 00408
✓	01700	Valve, Fuel Check, Flapper	10	-	-	-	-	-	-	-	-	-	0	-	-	
✓	01900	Adapter and Cap Assy, Pressure Refueling 2½ Tube Size	20	-	-	-	-	-	-	-	-	-	[illegible]	-	-	WP 00400 WP 00500

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
✓	02000	Valve, Drain, Fuel	3	–	–	–	–	–	–	–	–	–	3	–	–		WP 00300
	02100	Gage, Air Pressure	1	–	–	–	–	–	–	–	–	–	[illegible]	–	–		1) WP 00500
✓	02200	Valve, Siphon Breaker,															
		Ground Fueling	4	–	–	–	3	–	–	–	–	–	3	–	–		WP 00400 1) WP 00500
✓	02300	Valve, Plug, Precheck Fuel	10	–	–	–	3	–	–	–	–	–	3	–	–		WP 00400 1) WP 00500
✓	02300	Valve, Plug, Precheck Fuel	20	–	–	–	3	–	–	–	–	–	3	–	–		WP 00400 1) WP 00500
✓	02500	Valve, Float, Fuel	17	0	–	–	3	–	–	–	–	–	3	–	–		WP 00400 1) WP 00500
✓	02600	Valve, Fuel Shutoff															
		Control Sys.	7	–	–	–	3	–	–	–	–	–	3	–	–		WP 00400 1) WP 00500
	02900	Control Assy. Flexible															
		Push-Pull, Rolling Friction	1	0	–	–	–	–	–	–	–	–	3	–	–		1) WP 00600
	02900	Connecting Link Assy.,															
		Rigid, Fuel Dump Control	11	0	–	–	–	–	–	–	–	–	3	0	–		1) WP 00600
	02900	Clevis, Rod End, Fuel															
		Dump Valve	12	0	–	–	–	–	–	–	–	–	3	–	–		1) WP 00600
✓	02900	Bellcrank, Aft, Fuel															
		Dump Control	14	0	–	–	3	–	–	–	–	–	3	–	–		WP 00500 [illegible]
	02700	HANDLE MANUAL CONTROL	4	0	–	–	–	–	–	–	–	–	–	–	–		

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service	Notes
	02900	Control Assy, Flexible Push-Pull, Rolling Friction	29	7	-	-	-	-		-	-	[illegible]		-		3) WP 00600
✓	03000	Valve, Jettison, Fuel	36	-	-	-	[illegible]	-	-	-	-	[illegible]	-	-		2) WP 00500 3) WP 00600
	03000	Coupling Half, Tube, Fwd, Fuel Seal	37	-	-	-	-	-	-	-	-	[illegible]	-	-		3) WP 00600
	03000	Coupling, Half, Fuel Vent, Fwd	47	-	-	-	-	-	-	-	-	[illegible]	-	-		3) WP 00600
	03100	Adapter, Bulkhead, Jettison, Fuel Transfer Tank	19		-	-	-	-	-	-	-	[illegible]	-	-		3) WP 00600
✓	03100	Valve, Check, Fuel Jettison	30	-	-	-	[illegible]	-	-	-	-	[illegible]	O	-		2) WP 00500 3) WP 00600
	03100	Valve, Check, Fuel Jettison	42	-	-	-	O	-	-	-	-	[illegible]	O	-		3) WP 00600
✓	03200	Flame Arrestor Assy, Fuel Dump	33	-	-	-	[illegible]	-	-	-	-	[illegible]	-	-		2) WP 00500 3) WP 00600
	03300	Arrestor, Flame Vent Tank	32	-	-	-	-	-	-	-	-	[illegible]	-	-		3) WP 00600
✓	03400	Valve, Float, Fuel Vent Tank	7	-	-	-	[illegible]	-	-	-	-	[illegible]	-	-		2) WP 00500 3) WP 00600

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Maintenance Function: 1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
✓	03500	Valve, Solenoid, Fuel Shutoff	2	–	–	–	[illegible]	–	–	–	–	–	[illegible]	–	–		WP 00600 2) WP 00700
	03500	Valve	30	–	–	–	–	–	–	–	–	–	O	–	–		[illegible]
	03600	Heat Exchanger Assy., Air Pressure Sys, External Fuel Tank	1	–	–	–	–	–	–	–	–	–	O	–	–		
✓	03600	Valve, Check, Air	14	–	–	–	[illegible]	–	–	–	–	–	[illegible]	–	–		WP 00600 2) WP 007[illegible]
	03600	Filter	19		–	–	–	–	–	–	–	–	[illegible]	–	–		2) WP 00700
✓	03600	Valve	20	–	–	–	[illegible]	–	–	–	–	–	[illegible]	–	–		WP 00700 2) WP 33600
	03600	Valve Assy., Regulating Pressure, Fuel Tank Pressurization	24	–	–	–	–	–	–	–	–	–	[illegible]	–	–		2) WP 00700
✓	03600	Valve, Check, Air	26	–	–	–	[illegible]	–	–	–	–	–	[illegible]	–	–		WP 00700 2) WP [illegible]
✓	03600	Valve, Selector, Two-Position, Three-Way, Solenoid Operated	33	–	–	–	[illegible]	–	–	–	–	–	[illegible]	–	–		WP 00700 2) WP [illegible]

These components all responsibility of electric[illegible]

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service	Notes
	03800	Plate, Retaining, Electrical Connector, Front Spar	1													2) WP [illegible]
	03800	Plate, Retaining, Electrical Connector, Front Spar	2													2) WP [illegible]
	03800	Tubing, Heat, Shrinkable, Electrical Conduit	13													[illegible]
	03800	Wiring Harness, Branched	15													2) WP [illegible]
	03800	Transmitter Assy, Low Fuel Level and Fuel Quantity Gaging	16													[illegible]
	03900	Tubing, Heat, Shrinkable, Electrical Conduit	5													[illegible]
	03900	Tubing, Heat, Shrinkable, Electrical Conduit	27													[illegible]
	03900	Tubing, Heat, Shrinkable, Electrical Conduit	40													[illegible]

All electricians

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
✓	03900	Transmitter, Liquid Quantity, Fuel Gaging System	41														WP 00700 / [illegible]
✓	03900	Transmitter, Liquid Quantity, Fuel Gaging System	42														WP 00700 / [illegible]
✓	03900	Transmitter, Liquid Quantity, Fuel Gaging System	43														WP 00700 / [illegible]
.	03925	Tubing, Heat Shrinkable, Electrical Conduit	5														[illegible]
✓	03925	Transmitter, Liquid Quantity, Fuel Gaging System	40														[illegible] 00700 / [illegible]
✓	03925	Transmitter, Liquid Quantity, Fuel Gaging System	41														[illegible] 00700 / [illegible]
✓	03925	Transmitter, Liquid Quantity, Fuel Gaging System	42														[illegible] / [illegible]
✓	04000	Amplifier Power Supply Group	1														WP 00700 / [illegible]
✓	04100	Simulator, Fuel Quantity, External Fuel Tank Capacitance	8														[illegible] / [illegible]

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTFM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service	Notes
✓	04300	Probe Brstl., Air Refueling	1													WP 00500 2) WP 00400
	04350	Light Box Assy, Indicator ~~Position~~	2													—
	04350	Lamp	4													—
✓	04400	Nozzle	1													WP 00800 2) WP 00404
✓	04400	Base Assy, Fwd Bearing, Air Refueling Probe	15													WP 00100 2) WP 00104
✓	04400	Gearhead	16													WP 00500 2) WP 00404
	04400	~~Racking~~ Motor	17													
✓	04400	Aft Base Assy, Air Refueling Probe	28													WP 00800 2) WP 00404
✓	04450	Power Unit Assy, Air Refueling Ref Probe	1													WP 00500 2) WP 00402
✓	04450	Shaft, Flexible	19													WP 00500 2) WP 01001
	04450	Universal Joint Assy	21													2) WP 01001
	04450	Shaft, Input	25													2) WP 01001
	04450	Shaft, Output	35													2) WP 01001

Electrical

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust (1)	Align (2)	Calibrate (3)	Checkout/Troubleshoot (4)	Clean (5)	Disassemble/Assemble (6)	Inspect (7)	Lubricate (8)	Operate (9)	Remove/Install (10)	Repair (11)	Service (12)	(13)	Notes
	04450	Shaft, Flexible	36	-	-	-	-	-	-	-	-	-	3A	-	-		2) WP01001
	04450	Universal Joint	40		-	-	-	-		-	-	-	3A	-	-		3) WP01001
✓	04500	Base, Fwd Bearing, Air Refueling Probe	5	-	-	-	[illegible]	-	-	-	-	-	3A	-	-		1) WP004D00 2) WP004004
✓	04500	Base, Aft Bearing, Air Refueling Probe	13	-	-	-	[illegible]	-	-	-	-	-	3A	-	-		1) WP004D00 2) WP004004
✓	04700	Valve, Check, Aerial Refueling	8	-	-	-	[illegible]	-	-	-	-	-	3A	-	-		1) WP004D00 2) WP004004
	04800	Tension Tie, Probe Bof	11	-	-	-	-	-	-	-	-	-	3A	-	-		2) WP0003
	04800	Latch, Open Refueling Probe Door	22	-	-	-	-	-	-	-	-	-	3A	-	-		3) WP01003
	04800	Spring, Door Linkage, Refueling Probe	23	-	-	-	-	-	-	-	-	-	3A	-	-		3) WP01003
	04800	Push-Pull Rod, Door Linkage, Refueling Probe	27	O	-	-	-	-	-	-	-	-	3A	-			3) WP01003
	04800	Latch, Closed, Refueling Probe Door	28	-	-	-	-	-	-	-	-	-	3A	-	-		3) WP01003

TABLE A-II - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	04800	Rod End, Door Linkage, Refueling Probe	30A	-	-	-	-	-	-	-	-	-	2 1)	-	-		1) WP 01003
	04800	Clevis, Refueling Probe Door	36	-	-	-	-	-	-	-	-	-	2 1)	-	-		1) WP 01003
	04800	Link Assy, Inflight Refueling Door	36A	-	-	-	-	-	-	-	-	-	2 1)	-	-		1) WP 01003
	04800	Link Assy, Inflight Refueling Door	36B	-	-	-	-	-	-	-	-	-	2 1)	-	-		1) WP 01003
	04800	Spring Assy, Inflight Refueling Door	41	-	-	-	-	-	-	-	-	-	2 1)	-			1) WP 01003
	04800	Plunger, Spring, Inflight Refueling Door	46	-	-	-	-	-	-	-	-	-	2 1)	-	-		1) WP 01003
	04800	Guide, Spring, Inflight Refueling Door	47	-	-	-	-	-	-	-	-	-	2 1)	-	-		1) WP 01003
	04800	Spring, Compression, Inflight Refueling Door	48	-	-	-	-	-	-	-	-	-	2 1)	-	-		1) WP 01003

TABLE A-11 - TIM FOR FUEL AND IN-FLIGHT REFUELING SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Maintenance Function 1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
✓	04900	Switch, Proximity	4														DWP00800 DWP00104
✓	04900	Switch, Proximity	8														DWP00800 DWP00104

Electricians

TABLE A-III - TIM FOR AUXILIARY POWER UNIT

Found in Troubleshooting	Code						System Hardware Item	Reference Designator	Adjust (1)	Align (2)	Calibrate (3)	Checkout/Troubleshoot (4)	Clean (5)	Disassemble/Assemble (6)	Inspect (7)	Lubricate (8)	Operate (9)	Remove/Install (10)	Repair (11)	Service (12)	13	Notes
	0	0	4	0	1	1	Auxiliary Power Unit, APU		-	-	-	o	-	-	o	'	-	o	o	o		
	0	0	4	0	1	1	Auxiliary Power Unit, Coupling		-	-	-	-	-	-	-	-	-	o	-	-		
	0	0	4	0	1	1	Auxiliary Power Unit, Center Mount		o	-	-	-	-	-	-	-	-	o	-	-		
	0	0	4	0	2	1	APU System Rigging, Controller	2	o	-	-	-	-	-	-	-	-	o	-	-		
	0	0	4	0	2	1	APU System Rigging Switch	4	o	-	-	-	-	-	-	-	-	o	-	-		
	0	0	4	0	2	1	APU System Rigging, Assembly Link	5	o	-	-	-	-	-	-	-	-	o	-	-		
	0	0	4	0	2	1	APU System Rigging, Controller	8	o	-	-	-	-	-	-	-	-	o	-	-		
	0	0	4	0	2	1	APU System Rigging, Door Actuator	—														Airframe
	0	0	4	0	2	1	APU System Rigging, Bellcrank	—														

TABLE A-III - TIM FOR AUXILIARY POWER UNIT
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	0040211	APU System Rigging, Start Package															Airframe
	0040211	APU System Rigging, Shutoff Valve		o	-	-	-	-	-	-	-	-	o	-	o		
	0040211	APU System Rigging, Divider Mechanism		o	-	-	-	-	-	-	-	-	o	-	-		
	0040222	APU Inlet Door Rigging, Link	1														Airframe
	0040222	APU Inlet Door Rigging, Bellcrank	2														
	0040222	APU Inlet Door Rigging, Link	3														
	0040222	APU Inlet Door Rigging, Link	4														
	0040222	APU Inlet Door Rigging, Bellcrank	6														
	0040222	APU Inlet Door Rigging, Actuator															
	0040311	APU Controls, Removal and Installation, Door Actuator															
	0040311	APU Controls, Removal and Installation, Handle Controls		o	-	-	-	-	-	-	-	-	o	-	-		

TABLE A-III - TIM FOR AUXILIARY POWER UNIT
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13 Connect/Disconnect	Notes
	004031	APU Controls Removal and Installation Fuel Valve		o	-	-	-	-	-	-	-	-	o	-	-		
✓	00403	APU Controls Removal and Installation	14.	-	-	-	-	-	-	-	-	-	o	-	-		
	004032	Manual Push-Pull Control Assembly		-	-	-	-	-	-	-	-	-	o	-	-		
	004041	APU Door Actuator Removal and Installation, Actuator	—														Airframe
	004041	APU Door Actuator Removal and Installation, Electrical Connector		-	-	-	-	-	-	-	-	-	-	-	-	o	
	004041	APU Door Actuator Removal and Installation, Link	—														Airframe
	004041	APU Door Actuator Removal and Installation, Controls	—														Airframe

TABLE A-III - TIM FOR AUXILIARY POWER UNIT
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust (1)	Align (2)	Calibrate (3)	Checkout/Troubleshoot (4)	Clean (5)	Disassemble/Assemble (6)	Inspect (7)	Lubricate (8)	Operate (9)	Remove/Install (10)	Repair (11)	Service (12)	(13)	Notes
	004042	APU Air Inlet, Bellcrank Removal & Installation, Connecting Link											0				Airframe
	004042	APU Air Inlet, Bellcrank Removal & Installation, Bellcrank	—										0				Airframe
	004042	APU Air Inlet, Bellcrank Removal & Installation, Actuator Link	—										0				Airframe
	004051	Start Package and Accumulator Removal & Installation, Accumulator	—										0				Airframe
	004061	APU Divider Mechanism Removal & Installation, Handle Control		0	0	—	—	0	—	—	—	—	0	—	—		
	004061	APU Divider Mechanism Removal & Installation, Fuel Valve Control		0	0	—	—	0	—	—	—	—	0	—	—		

TABLE A-III - TIM FOR AUXILIARY POWER UNIT
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	004061	APU Divider Mechanism Removal & Installation, Door Actuator Controlled		o	o	-	-	-	o	-	-	-	o	-	-		
	005001	Electrical Components Removal & Installation, Overtemperature Switch		-	-	-	-	-	-	-	-	-	o	-	-		
	005001	Electrical Components Removal & Installation, Thermocouple		-	-	-	-	-	-	-	o	-	o	-	-		
	005001	Electrical Components Removal & Installation, Fault Indicator Set Assy		-	-	-	-	-	-	-	-	-	o	-	-		
	005001	Electrical Components Removal & Installation, Ignition Exciter		-	-	-	-	-	-	-	-	-	o	-	-		

TABLE A-III - TIM FOR AUXILIARY POWER UNIT
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	006001	Manual Fuel Shutoff Valve Removal & Installation, Adapter		-	-	-	-	-	-	-	-	-	o	-	-		
	006001	Manual Fuel Shutoff Valve Removal & Installation, Shut-off Valve		o	-	-	-	-	-	-	-	-	o	-	-		
	006001	Manual Fuel Shutoff Valve Removal & Installation, Link Assembly		o	-	-	-	-	-	-	-	-	o	-	-		
	006002	APU Fuel Filter Element & Fuel Pressure Switch Removal & Installation, APU		-	-	-	o	-	-	o	-	-	o	-	-		
	006002	APU Fuel Filter Element & Fuel Pressure Switch Removal & Installation, Fuel Pressure Switch		-	-	-	-	-	-	-	-	-	o	-	-		
	006001	Manual Fuel Shutoff Valve, Adaptor		-	-	-	-	-	-	-	-	-	-	-	-		Nothing O level
	006002	APU Filter Element-Fuel Pressure Switch, Filter Assembly		-	-	-	-	-	-	-	-	-	-	-	-		"

TABLE A-III - TIM FOR AUXILIARY POWER UNIT
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	006002	APU Fuel Filter Element and Fuel Pressure Switch Removal & Installation, Filter Element		-	-	-	-	-	-	-	-	-	c	-	-		
	007001	Oil Cooler & Filter Element Removal & Installation, Oil Filter Assembly		-	-	-	-	-	-	-	-	-	c	-	-		
	007001	Oil Cooler & Filter Element Removal & Installation, Element		-	-	-	-	-	-	-	-	-	c	-	-		
	007001	Oil Cooler & Filter Element Removal & Installation, Oil Cooler		-	-	-	-	-	-	-	-	-	c	-	-		
	008012	APU Fire Detection Control Unit, Control Unit															Nothing @ O Level

TABLE A-III - TIM FOR AUXILIARY POWER UNIT
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	008021	APU Control Panel, APU Run Indicator															
	008021	APU Control Panel, Disarmed Indicator															
	008022	Sequence & Safety Unit, APU Sequence and Safety Unit		-	-	-	-	-	-	-	-	-	O	-	-		
	008022	Sequence & Safety Unit, APU Generator Control		-	-	-	-	-	-	-	-	-	O	-	-		

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	0 0 1 0 0	Valve, Check, Low-Stage Bleed Air	1.									w					4P 55431
	0 0 1 0 0	Coupling, Sheet Metal	2														
	0 0 2 0 0	Coupling, Sheet Metal	3														
	0 0 2 0 0	Turnbuckle Body, 14th Stage Valve	5"	0.													
	0 0 2 0 0	Valve, Regulator, High-Stage Bleed Air	10		0		0			0	0						
	0 0 2 0 0	Coupling, Sheet Metal	30									0					
	0 0 3 0 0	Coupling, Sheet Metal	4									0					
	0 0 3 0 0	Valve, Bleed Air Shutoff	13		5		0			0	0						
	0 0 4 0 0	Valve, Bleed Air Shutoff and Recirculation	4														
	0 0 4 0 0	Post, Bleed Air Duct	13														
	0 0 5 0 0	Valve, Pressure Control Regulator	26								y						

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust (1)	Align (2)	Calibrate (3)	Checkout/Troubleshoot (4)	Clean (5)	Disassemble/Assemble (6)	Inspect (7)	Lubricate (8)	Operate (9)	Remove/Install (10)	Repair (11)	Service (12)	Notes (13)
	00500	Filter	34	-	-	-	-	-	-	-	-	O	-	-	-	WP
	00500	Valve	64	-	-	-	-	-	-	-	-	W	-	-		WP [illegible]
	00600	Nipple Assy, Pneumatic Start, Exhaust, [illegible]	8													WP [illegible] (MECH)
	00600	Union	20	-	-	-	O	-	-	-	-	O	-	-		
	00700	Nipple, Engine Ground Start, Bleed Air	9	-	-	-	-	-	-	-	-	W	-	-		WP 00401
	00700	Coupling, Sheet Metal	12	-	-	-	-	-	-	-	-	[illegible]	-	-		[illegible]
	00700	Valve, Check, Engine Bleed Air, Ground Start	14	-	-	-	-	-	O	-	-	W	-	-		WP [illegible]
	00700	Vebreaker Assy, Louver, Engine Ground Start Duct	15	-	-	-	-	-	-	-	-	W	-	-		WP [illegible]
	00700	Cable	18	-	-	-	-	-	-	-	-	W	-	-		WP [illegible]
	00750	Port, Electrical Mechanical Equipment, Bleed Air Duct	33	-	-	-	-	-	-	-	-	-	-	-		
	00750	Glass Sight Port														
		Auxiliary Power Unit Check Valve	54									O				IA MECH

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service		Notes
	00750	Coupling, Sheet Metal	57	-	-	-	-	-	-	-	-	-	o	-	-		
	00800	Valve, Shutoff, Pressure															
		Operated, Butterfly, 3 inch															
		~~Solenoid, Valve Controller~~	-1														[illegible]
	00900	~~Transmitter, Pressure~~	-7				o						w				[illegible]
	00950	~~Switch~~	-1														[illegible]
	00950	Switch	2	-	-	-	o	-	-	-	-	o	-	-	-		
	00950	Indicator	4	-	-	-	o	-	-	-	-	o	-	-	-		
	00950	Selector, Position, Valve,															
		Ram Air	6	-	-	-	o	-	-	-	-	o	-	-	-		
	00950	Switch	7	-	-	-	o	-	-	-	-	o	-	-	-		
	00950	Switch	8	-	-	-		-	-	-	-	o	-	-	-		
	00950	Selector, Temperature Cabin															
		and Suit Air	10	-	-	-	o	-	-	-	-	o	-	-	-		
	00950	~~Receptacle~~	11														NA [illegible]
	00950	Switch	12	-	-	-	-	-	-	-	-	o	-	-	-		
	00950	Indicator, Bleed Air	13	-	-	-	o	-	-	-	-	o	-	-	-		
	00[illegible]00	Filter		-	-	-	o	[illegible]	-	-	-	-	o	-	-		[illegible]

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13 Notes
	01000	Valve, Temperature Control Deicing Regulator	11	-	-	-	-	-	-	-	-	-	0	-	-	
	01100	Coupling, Sheet Metal	2	-	-	-	-	-	-	-	-	-	0	-	-	
	01200	Coupling, Sheet Metal	1	-	-	-	-	-	-	-	-	-	0	-	-	
	01200	Coupling, Sheet Metal	13	-	-	-	-	-	-	-	-	-	0	-	-	
	01200	Coupling, Sheet Metal	15	-	-	-	-	-	-	-	-	-	0	-	-	
	01200	Coupling, Sheet Metal	22	-	-	-	-	-	-	-	-	-	0	-	-	
	01300	Coupling, Sheet Metal	3	-	-	-	-	-	-	-	-	-	0	-	-	
	01300	Insulation, Flexible Joint Duct	4	-	-	-	-	-	-	-	-	-	0	-	-	WP 00415
	01400	Thermostat, Temperature Control Bleed Air	4	-	-	-	-	-	-	-	-	-	0	-	-	WP 00415
	01400	Anticipator, Bleed Air Temperature Control	10	-	-	-	-	-	-	-	-	-	0	-	-	WP 00415
	01500	Refrigeration Unit, Aircraft Pressurization and Air Conditioning	2			-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	-	[illegible]	WP 00501
	0[illegible]4[illegible]0	Gasket	5	-	-	-	-	-	-	0	-	-	0	-	-	
	0[illegible]4[illegible][illegible]	Gasket	11	-	-	-	-	-	-	0	-	-	0	-	-	

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service	Notes
	01500	Cable, Periscal	6	0					-		-	-	W	-	-	WP00501
	01600	Refrigeration Unit, Aircraft Pressurization & Air Conditioning	2	-	-	-	0	0	0	0	0	0	W	-	0	WP00501
	01600	Clamp	9A	-	0	-	-	-	-	-	-	-	0	-	-	
	01600	Coupling	10	-		-	-	-	-	-	-	-	0	-	-	
	01600	Coupling	28	-		-	-	-	-	-	-	-	0	-	-	
	01700	Coupling	1	-		-	-	-	-	-	-	-	0	-	-	
	01700	Control, Low Limit Refrigeration Pack	3	-	-	-	0	-	-	-	-	-	W	-	-	[illegible]
	01700	Cable, Periscal	8	-	-	-	-	-	-	-	-	-	0	-	-	[illegible]
	01700	Coupling, Clamp	19	-	0	-	-	-	-	-	-	-	0	-	-	
	01700	Valve Assy, Bypass	23	-	-	-	-	-	-	-	-	-	0	-	-	[illegible]
	01700	Coalescer Assy, Conical Water Separator	26	-	-	-	-	0	-	0	-	-	-	-	-	
	01700	Sensor Assy, Water Separator Anti-Icing	28	-	0	-	-	0	-	0	-	-	0	-	-	

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service		Notes
				1	2	3	4	5	6	7	8	9	10	11	12	13	
	01800	Valve, Cabin Temperature Control, Modulating	2	-	-	-	-	-	-	-	-	-	W	-	-		[illegible]
	01800	Coupling, Sheet Metal	16	-	-	-	-	-	-	-	-	-	O	-	-		
	01900	Valve, Shutoff, Air Recirculation	3	-	-	-	-	-	-	-	-	-	W	-	-		WP 00801
	01900	Switch, Thermal Recirculating Air	5	-	-	-	-	-	-	-	-	-	W	-	-		WP 00805
	01900	Sensor, Temperature Control, Cabin Recirculating Air	6	-	-	-	-	-	-	-	-	-	W	-	-		WP 00805
	01900	Thermostat, Suit Air High Temperature Limit	8	-	-	-	-	-	-	-	-	-	W	-	-		WP 00505
	01900	Control, Suit Air Temperature	11	-	-	-	-	-	-	-	-	-	W	-	-		WP 00405
	02000	Coupling, Sheet Metal	4	-	-	-	-	-	-	-	-	-	O	-	-		
	02000	Valve, Ram Air Shutoff	14	-	-	-	-	-	-	-	-	-	W	-	-		WP 00605
	02000	Valve, Check, Ram and Recirculating Air Supply	20	-	-	-	-	-	-	-	-	-	W	-	-		WP 00606

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	02000	Housing	21	-	-	-	-	-	-	-	-	-	W		-		WP 00606
	02100	Valve, Ground Air Supply Check	4	-		-	-	-	-	-	-	-	W	-	-		WP 00607
	02100	Adapter, Air Conditioning Ground Service	5	-	-	-	-	-	-	-	-	-	W	-	-		WP 00607
	02100	Clamp, Duct	8	o	o	-	-	-	-	-	-	-	O	-	-		
	02100	Clamp, Band, Light Weight	8a	-	-	-	o		-	-	-	-	O	-	-		
	02200	Coupling, Sheet Metal	2	-	o	-	-	-	-	-	-	-	O	-	-		
	02200	Valve, Control, Suit Air Temperature	3	-	-	-	-	-	-	-	-	-	O	-	-		
	02200	Coupling, Sheet Metal	4	-	o	-	-	-	-	-	-	-	O	-	-		
	02300	Thermostat, Cabin, Air High Temperature Limit	4	-	-	-	-	-	-	-	-	-	W	-	-		WP 00603
	02300	Control, Cabin Air Temperature	7	-	-	-	-	-	-	-	-	-	W	-	-		WP 00602
	02400	Selector, Temperature, Cabin	27	-	-	-	-	-	-	-	-	o	-	-	-		
	02500	Fan, Tangential, 880 Standard Cubic Feet Per Minute, Unpressurized Avionics	12														WP 00801
	?2100	Cover, Air Duct.	11	-	-	-	-	-	-	-	-	-	[illegible]	-	-		

Elect

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	02500	Valve, Control, Air Temperature,															
		Unpressurized Avionics	11 ~~15~~	-	-	-	-	-	-	-	-	-	W	-	-		WP 00801
	02500	Switch, Pressure, Differential	22 ~~25~~	-	-	-	-	-	-	-	-	-	W	-	-		WP 00801
	02500	Thermostat, Temperature															
		Control, Avionics Air	31	-	-	-	-	-	-	-	-	-	W	-	-		WP 00801
	02600	Switch, Thermal	6	-	-	-	-	-	-	-	-	-	W	-	-		WP 00801
	02600	Actuator, Linear, Communication															
		Equipment Cooling Door	17	O	-	-	-	-	-	O	-	-	O	-	-		
	02600	Fan, Vaneaxial, 880 Standard															
		Cubic Feet Per Minute,															
		~~Unpressurized Avionics~~	~~26~~														~~WP 00802~~ Elect
	02600	Thermostat, Temperature															
		Control, Avionics Air	29	-	-	-	-	-	-	-	-	-	W	-	-		WP 00802
	02600	Valve, Control Air Temperature,															
		Unpressurized Avionics	38	-	-	-	-	-	-	-	-	-	W	-	-		WP 00802
	02600	Switch, Pressure,															
		Differential	39	-	-	-	-	-	-	-	-	-	W	-	-		WP 00802

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service	Notes
	02700	Restrictor, Air Flow Infrared Compt.	5	-	-	-	-	-	-	-	-	-	-	-		Nothing
	02700	Switch, Pressure, Differential	27	-	-	-	-	-	-	-	-	O	-			
	02700	Fan, Vaneaxial, 880 Standard Cubic Feet Per Minute, Unpressurized Avionics	30	-	-	-	-	-	-	-	-	-	-	-		Elect
	02700	Restrictor, Air Flow, Camera Bay	40	-	-	-	-	-	-	-	-	O	-			
	02800	Fan, Vaneaxial, 250 Standard Cubic Feet Per Minute, Internal Avionics	29	-	-	-	-	-	-	-	-	-	-	-		WP [illegible] 04 Elect
	02800	Switch, Pressure, Differential	47	-	-	-	-	-	-	-	-	W	-	-		WP008'04
	02900	Switch, Pressure, Differential	14	-	-	-	-	-	-	-	-	W	-	-		WP [illegible]
	02900	Fan, Vaneaxial, 250 Standard Cubic Feet Per Minute, Internal Avionics	44									-				WP [illegible] Elect

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	0 3 0 0 0	Fan, Vaneaxial, 250 Standard															
		Cubic Feet Per Minute,															
		~~Internal Avionics~~	~~3~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~		~~[illegible]~~ Elect
	0 3 0 0 0	Switch, Pressure Differential	40	-	-	-	-	-	-	-	-	-	W	-	-		WP 00307
	0 3 1 0 0	Switch, Pressure Differential	2	-	-	-	-	-	-	-	-	-	W	-	-		WP 00805
	0 3 1 0 0	Coupling, Sheet Metal	5	-	-	-	-	-	-	-	-	-	O	-	-		
	0 3 1 0 0	Coupling, Sheet Metal	6	-	-	-	-	-	-	-	-	-	O	-	-		
	0 3 1 0 0	Valve, Regulator, Cabin	13	-	-	-	-	-	-	O	-	-	W	-	-		WP 00805
	0 3 1 0 0	Coupling, ~~Component of~~	8	-	-	-	-	-	-	-	-	-	O	-	-		
	0 3 1 0 0	Coupling, Sheet Metal	14	-	-	-	-	-	-	-	-	-	O	-	-		
	0 3 1 0 0	Coupling, Sheet Metal	16	-	-	-	-	-	-	-	-	-	O	-	-		
	0 3 1 0 0	Fan, Vaneaxial, 1300 CFM,															
		Wheel, 400 Hz, 115-200 Volt	17	-	-	-	-	-	O	-	-	-	W	-	-		WP 00805
	0 3 2 0 0	Valve, Temperature Control,															
		Cabin Recirculating Air	2	-	-	-	-	-	-	-	-	-	W	-	-		WP 00806
	0 3 2 0 0	Coupling, Sheet Metal	6	-	-	-	-	-	-	-	-	-	O	-	-		
	0 3 3 0 0	Coupling, Sheet Metal	1	-	-	-	-	-	-	-	-	-	O	-	-		

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	03300	Valve, Shutoff Air Recirculation	4	-	-	-	-	-	-	-	-	-	W	-	-		WP 00807
	03300	Coupling, Sheet Metal	5	-	-	-	-	-	-	-	-	-	O	-	-		
	03400	Switch, Thermal, Recirculating Air	2	-	-	-	-	-	-	-	-	-	W	-	-		WP 00808
	03400	Sensor, Temperature Control, Cabin Recirculating Air	3	-	-	-	-	-	-	-	-	-	W	-	-		WP 00808
	03400	Valve, Check, Ram and Recirculating Air Supply	6	-	-	-	-	-	-	O	-	-	W	-	-		WP 00808
	03500	Synclamp	3														WP 00807
	03500	Fan, Cooling	4														WP 00807
	03500	Intercommunication System	6														WP 00807
	03500	Synclamp	11														WP 00807
	03500	Fan, Cooling	13														WP 00807
	03525	Switch	1	-	-	-	-	-	-	-	-	W	O	-	-		
	03600	Intercommunication System	1														WP 00807
	03600	Fan, Cooling	7														WP 00807
	03600	Synclamp	19														WP 00807

Elec

Elec

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13 Notes
	03600	Fan, Cooling	21													WP00831
	03700	Clamp, Synchro	4													WP00810
	03700	Fan, Cooling	5													WP00810
	03700	Synclamp	7													WP00810
	04100	Connecting Link, Rigid Sonobuoy Compt Heating	10	-	-	-	-	-	-	-	-	W	-	-		WP01001
	04100	Connecting Link, Rigid Sonobuoy Compt Heating	11	-	-	-	-	-	-	-	-	O	-	-		
	04100	Connecting Link, Rigid Sonobuoy Compt Heating	13	-	-	-	-	-	-	-	-	O	-	-		
	04100	Coupling, Sheet Metal	16	-	-	-	-	-	-	-	-	O	-	-		
	04100	Valve, Regulator, Cabin Pressure	17	-	-	-	-	-	-	-	-	W	-	-		WP01001
	04100	Cradle, Valve 75483	23	-	-	-	-	-	-	-	-	W	-	-		WP01001
	04100	Coupling, Sheet Metal	26													Not[illegible]
	04200	Filter Air Pressure Regulator Control	24B	-	-	-	-	-	-	-	-	O	-	-		

Elect

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service		Notes
				1	2	3	4	5	6	7	8	9	10	11	12	13	
	04200	Control, Regulator, Cabin Pressure	35	-	-	-	-	-	-	-	-	O	W	-	-		WP 01002
	04400	Coupling, Sheet Metal	9	-	-	-	-	-	-	-	-	-	O	-	-		
	04400	Valve, Regulator, Cabin Pressure Safety	10	-	-	-	-	-	-	-	-	-	W	-	-		WP 01004 [illegible]
	04500	Coupling, Sheet Metal	5	-	-	-	-	-	-	-	-	-	O	-	-		
	04500	Valve, Regulating, Fluid Pressure, Deice System	6	-	-	-	-	-	-	-	-	-	W	-	-		WP 01101
	04600	Coupling, Sheet Metal	2	-	-	-	-	-	-	-	-	-	O	-	-		
	04600	Valve, Regulating, Fluid Pressure, Deice System	4	-	-	-	-	-	-	-	-	-	W	-	-		WP 01101
	04600	Test, Elec Mechanical Equipment, Bleed Air	6.	O	-	-	-	-	-	-	-	-	W	-	-		WP 01101
	04700	Coupling, Sheet Metal	7	-	-	-	-	-	-	-	-	-	O	-	-		
	04700	Coupling, Sheet Metal	28	-	-	-	-	-	-	-	-	-	O	-	-		
	04700	Coupling, Sheet Metal	53	-	-	-	-	-	-	-	-	-	O	-	-		
	04700	Valve, Solenoid, Bleed Air Deice System	55	-	-	-	O	-	-	-	-	-	W	-	-		WP 01102

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust (1)	Align (2)	Calibrate (3)	Checkout/Troubleshoot (4)	Clean (5)	Disassemble/Assemble (6)	Inspect (7)	Lubricate (8)	Operate (9)	Remove/Install (10)	Repair (11)	Service (12)	Notes
	04700	Coupling, Sheet Metal	57	-	-	-	-	-	-	-	-	O	-	A		
	04725	Coupling, Sheet Metal	3	-	-	-	-	-	-	-	-	O	-	-		
	04725	Valve, Solenoid, Bleed Air Device System	4	-	-	-	-	-	-	-	-	W	-	-		WP01102
	04750	Timing Control, Wing and Empennage Deice	~~1~~													~~WP01103~~ Elec
	04900	Coupling, Sheet Metal	19	-	-	-	-	-	-	-	-	O	-	-		
	04900	Plug, Elec Connection	~~26~~													~~WP01105~~ Elec
	04900	Valve, Solenoid, Bleed Air Deice System	27	-	-	-	-	-	-	-	-	W	-	-		WP01105
	05000	Coupling, Sheet Metal	2A	-	-	-	-	-	-	-	-	O	-	-		
	05000	Valve, Regulating, Fluid Pressure Deice System	7	-	-	-	-	-	-	-	-	W	-	-		WP01107
	05000	Coupling Sheet Metal	8A	-	-	-	-	-	-	-	-	O	-	-		
	05000	Hinge, Half	16	-	-	-	-	-	-	-	-	W	-	-		WP01107
	05000	Hinge, Half	21	-	-	-	-	-	-	-	-	W	-	-		WP01107
	05000	Hinge, Half	24	-	-	-	-	-	-	-	-	W	-	-		WP01107
	04700	Coupling Sheet Metal	59	-	-	-	-	-	-	-	-	O	-	-		
	05000	Hinge, Half	13	-	-	-	-	-	-	-	-	W	-	-		WP01107

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Maintenance Function 1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	05000	Hinge, Half	33	-	-	-	-	-	-	-	-	-	W	-	-		WP 01101
	05000	Pin, Hinge, Straight	35	'	-	-	-	-	-	-	-	-	W	-	-		WP01101
	05100	Coupling	8														Nothing
	05100	Converter, Oxygen	12	-	-	-	-	-	-	O	-	-	W	-	-		WP01201
	05100	Coupling	13	-	-	-	-	-	-	-	-	-	O	-	-		
	05100	Coupling	14	-	-	-	-	-	-	-	-	-	O	-	-		
	05100	Coupling	15	-	-	-	-	-	-	-	-	-	O	-	-		
	05100	Heat Exchanger, Air-															
		craft, Liquid Oxygen	36	-	-	-	-	-	-	-	-	-	W	-	-		WP01201
	05100	Receptacle	40														WP01201 Elect
	05150	Indicator	2	-	-	-	-	-	-	-	-	O	-	-	-		WP01202
	05200	Switch, Pressure	12	-	-	-	-	-	-	-	-	-	O	-	-		
	05250	Diode	1														
	05250	Receptacle	4														
	05250	Switch (Bleed Air Leak															Elect
		Detect-Test)	5														
	05250	Resistor	6														

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Adjust	Align	Calibrate	Checkout/Troubleshoot	Clean	Disassemble/Assemble	Inspect	Lubricate	Operate	Remove/Install	Repair	Service	Notes
	05275	Recistor	1													
	05275	Receptacle	4													
	05275	Switch	5													WP01202
	05275	Diode	6													
	05300	Hose Assy, Oxygen Communication and Ventilation Aircraft to Crew Disconnect	10	-	-	-	-	-	-	-	-	-	W	-	-	WP01204
	05300	Valve, Oxygen Control, Manual	12	-	-	-	-	-	-	-	-	O	W	-	-	WP01204
	05300	Hose Assy, Oxygen Communication and Ventilation Aircraft to Crew Disconnect	22	-	-	-	-	-	-	-	-	-	W	-	-	WP01204
	05300	Valve, Oxygen Control, Manual	24	-	-	-	-	-	-	-	-	O	W	-	-	WP01207
	05300	Valve, Oxygen Control, Manual	40	-	-	-	-	-	-	-	-	O	W	-	-	WP01204

Elect

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	05300	Hose Assy, Oxygen, Communication and Ventilation: Aircraft to Crew Disconnect	50	-	-	-	-	-	-	-	-	-	W	-	-		WP01204
	05300	Hose Assy, Oxygen, Communication and Ventilation Aircraft to Crew Disconnect	66	-	-	-	-	-	-	-	-	-	W	-	-		WP01204
	05300	Valve, Oxygen Control, Manual	84	-	-	-	-	-	-	-	-	O	W	-	-		WP01204
	05500	Synslamp	3														— Nothing
	05600	Switch, Thermostatic	1	-	-	-	-	-	-	-	-	-	O	-	-		
	05600	Transmitter, Temperature, Electrical Resistance, Thermistor Probe Sensor	4	-	-	-	-	-	-	-	-	-	O	-	-		
	05700	Switch, Thermostatic	2	-	-	-	-	-	-	-	-	-	O	-	-		
	05700	Transmitter, Temperature, Electrical Resistance, Thermistor Probe Sensor	5	-	-	-	-	-	-	-	-	-	O	-	-		

TABLE A-IV - TIM FOR ENVIRONMENTAL CONTROL SYSTEM
(continued)

Found in Troubleshooting	Code	System Hardware Item	Reference Designator	Maintenance Function: 1 Adjust	2 Align	3 Calibrate	4 Checkout/Troubleshoot	5 Clean	6 Disassemble/Assemble	7 Inspect	8 Lubricate	9 Operate	10 Remove/Install	11 Repair	12 Service	13	Notes
	05700	Switch, Thermostatic	11	-	-	-	-	-	-	-	-	-	W	-	-		WP 01105
	05700	Transmitter, Temperature, Electrical Resistance, Thermistor Probe Sensor	12	-	-	-	-	-	-	-	-	-	W	-	-		WP 01108
	05700	Switch, Thermostatic	16	-	-	-	-	-	-	-	-	-	W	-	-		WP 01108
	05700	Transmitter, Temperature, Electrical Resistance, Thermistor Probe Sensor	17	-	-	-	-	-	-	-	-	-	W	-	-		WP 01105
	b b b b b b																
	b b b b b b b b																

APPENDIX B

STATEMENT OF WORK

APPENDIX B

STATEMENT OF WORK

Develop, using Navy-provided task identification list (augmented by on-site contractor observations), a training system specification for organizational level maintenance training for the following systems of the S3A:

1. Environmental Control System.

2. Automatic Flight Control System.

3. Fuel Control System.

The following sub-products must be developed and delivered, after approval:

1. Skills and knowledges analysis - identifying S&K required for performing described tasks:

   (a) S&K in students repertoire and

   (b) S&K to be acquired in training.

2. Specific Behavioral/Performance Objectives for training system graduates.

3. Curriculum Outline.

4. Media/Method selections.

5. Functional and, where possible, material specifications for required MTUs.

6. Suggested entry level and completion tests to determine whether SBOs have been achieved.